

Patent Claims

1. A method for producing a cylindrical glass body, in particular a quartz glass body, in a vertical drawing process, comprising a method step in which a glass blank is supplied to a heating zone, softened therein zonewise and a glass strand is drawn off by means of a draw-off device at a controlled drawing speed from the softened area, said draw-off device comprising a first draw-off unit with rolling bodies rolling on said glass strand and being distributed around the circumference thereof, said rolling bodies being formed by a reference rolling body and at least one auxiliary rolling body, the drawing speed being controlled via the speed of said reference rolling body, characterized in that a value for the torque of said reference rolling body (3) is determined in dependence upon the weight of the drawn-off glass strand (5), and that the determined value is used as a setpoint torque for setting the torque in said at least one auxiliary rolling body (4; 7; 8).
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2. The method according to claim 1, characterized in that said torque in said at least one auxiliary rolling body (4; 7; 8) is set to said setpoint torque.
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3. The method according to claim 1 or 2, characterized in that a draw-off device is used which comprises at least one second draw-off unit (2) including a plurality of rolling bodies (7; 8).
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4. The method according to claim 3, characterized in that said rolling bodies (7; 8) of said at least one second draw-off unit (2) are movable in a direction perpendicular to the longitudinal axis (15) of said glass strand (5).
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5. The method according to claim 3 or 4, characterized in that said rolling bodies of said at least one second draw-off unit are used as auxiliary rolling bodies (7; 8), the setpoint torque thereof being set with reference to the torque of said reference rolling body (3).
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6. The method according to any one of the preceding claims, characterized in that said rolling bodies (3; 4; 7; 8) are pressed with an adjustable contact pressure force (34) against said glass strand (5).
- 5 7. The method according to claim 6, characterized in that said contact pressure force (34) is set in dependence upon the weight of the drawn-off glass strand (5).
8. The method according to claim 3 and any one of claims 6 or 7, characterized in that, when a predetermined maximum contact pressure force is exceeded in said rolling bodies (3; 4) of said first draw-off unit (1), said rolling bodies (7; 8) of said second draw-off unit (2) are additionally brought into engagement with said glass strand (5), or said contact pressure force is increased in rolling bodies of said second draw-off unit that are in engagement with said glass strand.
- 15 9. The method according to any one of claims 7 or 8, characterized in that the control of said contact pressure force (14) comprises a damping member (21).
- 20 10. The method according to any one of the preceding claims, characterized in that rolling bodies (3; 4; 7; 8) are used with a roll surface (9) having a coefficient of friction in the range of from 0.2 to 0.5
- 25 11. The method according to claim 10, characterized in that said roll surface (9) contains asbestos, asbestos substitutes or SiC.

12. An apparatus for producing a cylindrical glass body, in particular a quartz glass body, in a vertical drawing process, comprising an annular heating element for heating and softening a glass blank, comprising a draw-off device including a frame which holds thereon a first draw-off unit with rolling bodies 5 rolling on said glass strand and being distributed around the circumference thereof, said rolling bodies being formed by a reference rolling body and at least one auxiliary rolling body, said reference rolling body being connected to a speed control for setting the drawing speed, characterized in that there is provided a means (13) for determining the torque during rolling of said reference rolling body (3), and a means (14) for 10 setting the torque in said at least one auxiliary rolling body (4; 7; 8) to a setpoint torque.
13. The apparatus according to claim 12, characterized in that said draw-off device comprises at least one second draw-off unit (2) comprising a plurality 15 of rolling bodies (7; 8).
14. The apparatus according to claim 13, characterized in that said second draw-off unit (2) is held in said frame, and that said rolling bodies (7; 8) of 20 said at least one second draw-off unit (2) are movably held on said frame in a direction perpendicular to the longitudinal axis (15) of said glass strand (5).
15. The apparatus according to claim 13 or 14, characterized in that said rolling bodies (7; 8) of said second draw-off unit (2) are connected to a means (14) 25 for setting said torque.
16. The apparatus according to any one of claims 12 to 15, characterized in that there is provided a contact pressure force control unit (25; 37; 38) by 30 means of which said rolling bodies (3; 4; 7; 8) are pressed with an adjustable contact pressure force (34) against said glass strand (5).

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17. The apparatus according to claim 16, characterized in that said contact pressure force control unit (25; 37; 38) comprises a damping member (21).
18. The apparatus according to any one of claims 12 to 17, characterized in that there is provided a pivot device by means of which said frame is pivotable about a tilt angle relative to the vertical.
19. An apparatus for producing a cylindrical glass body, in particular a quartz glass body, in a vertical drawing process, comprising an annular heating element for heating and softening a glass blank, comprising a draw-off device including a frame which holds thereon a first draw-off unit with rolling bodies rolling on said glass strand and being distributed around the circumference thereof, said rolling bodies being formed by a reference rolling body and at least one auxiliary rolling body, said reference rolling body being connected to a speed control for setting the drawing speed, characterized in that said rolling bodies (3; 4; 7; 8) are provided with a roll surface having a coefficient of friction in the range of from 0.2 to 0.5
20. The apparatus according to claim 19, characterized in that said roll surface (9) contains asbestos, asbestos substitutes or SiC.